UUV-N Operating Environment and Parameters

UUV-N Industry Day

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VSW Environment

- Extremely challenging conditions
- Characterized by NSCT-1 divers as “working inside a washing machine”
- Primary dynamics:
  - Significant wave height
  - Wave period
  - Wave direction
  - Bottom gradient
  - Coastal cell

VSW Environment (cont)

- Dynamics create the unique challenges associated with VSW:
  - Surge
  - Current
  - Turbidity
- Impacts:
  - Mines move through migration on the bottom or within the water column (moored mines)
  - Mines can become buried
  - Wave and current action may create scour zones around the mines
  - Difficulty in launching and recovering vehicles

VSW Environment (cont)

- Other factors:
  - Marine growth:
    - Kelp
    - Sea weed
  - Naturally occurring obstacles:
    - Large rocks
    - Coral heads
    - Sand bars

Coastal Cell Focus

- UUV-N vehicles must be capable of operating in the following types of coastal cells:
  - Collision coast: Ex. Southern California
    - Steep gradient
    - Narrow continental shelf
    - Mid to long period waves (12-18 seconds)
  - Trailing edge coast: Ex. Duck, N.C.
    - Minimal gradient
    - Wide continental shelf
    - Primarily mid period waves (12 seconds)
    - Constantly shifting shoals and sand bars

Coastal Cell Focus (cont)

- UUV-N vehicles must be capable of operating in the following types of coastal cells:
  - Marginal seas: Ex. partially enclosed bodies of water with shorter fetches – Corpus Christi TX, West coast of Korea
    - Minimal gradient
    - Varying shelf or possibly deltaic conditions
    - Shorter wave periods (6-8 seconds)
    - Shifting shoals and sand bars

VSW Environmental Operating Parameters

- Previously characterized as SS3 in read-ahead package
- Modified to:
  - Significant wave height: 4’ in 10 fsw
  - Wave period: 12 seconds
  - Gradient: 2-3%
- Bottom Type:
  - Smooth sand bottom
  - Burial unlikely

QUESTIONS?